ECOLOGY OF ORUAWAIRUA ISLAND, MARLBOROUGH SOUNDS, NEW ZEALAND

I. INTRODUCTION

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ABSTRACT

An introduction is given to a series of investigations describing aspects of the ecology of Oruawairua Island. The topography, geology, soils and climate of the island are briefly described, along with an outline of previous human activities.

INTRODUCTION

Oruawairua Island (otherwise known as Blumine Island) lies south-east of Endeavour Inlet and 0.4 km north-west of the larger Arapawa Island in Queen Charlotte Sound (41° 10' S, 174° 15' E) (Fig.1). This survey arose from a request from the Marlborough Sounds Maritime Park Board for information on the natural history and general biology of the island, and its importance for the conservation of New Zealand indigenous plants, animals and habitats. In addition, because Oruawairua

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Island has been extensively farmed in the past, an assessment of how well the native vegetation has been regenerating since the farming activities ceased could be made.

The field work was conducted in two parts:

(1) 9-12 November, 1978 during windy, wet conditions which made field observations difficult and restricted the survey to the western side of the island.

(2) 1-5 February, 1980 during fine weather enabling observations to be made over most of the island.

PHYSICAL FEATURES

Oruawairua Island is approximately 4 km long (north-south) with a maximum width of 2.5 km (east-west) and covers approximately 450 hectares (Fig.1). It has little flat land, the physiography being primarily of a hilly nature with moderately steep slopes that reach to an altitude of 978 m a.s.l.. A main ridge lying approximately north-south forms a central axis from which rounded ridges slope toward the sea on all sides of the island, but end with abrupt drops into the sea. In general, the creeks fall steeply to near sea level, but flatten out slightly near the coast where they enter the sea in small stoney bays.

The parent rock of the island belongs to the Pelorus group which has a thick sequence of unfossiliferous green greywacke and dark argillite that grades down into schist (Beck 1964). This is exposed in some creek beds and at headlands around the island. Lowland yellow-brown earths belonging to the Arapawa silt loam set have developed above this parent rock (New Zealand Soil Bureau 1965). These soils are weakly acidic and generally have low carbon and nitrogen contents (C/N = 16 for the A horizon) with a medium natural nutrient status (New Zealand Soil Bureau 1968). Those on northern and western aspects tend to become very dry, especially under scrub and grassland vegetation.

CLIMATE

There are no known climatological records for Oruawairua Island, however it lies in a climatic district where warm summers and mild winters are experienced (mean annual temperature 12^{o}C) (Robertson 1959). This area experiences few frosts with

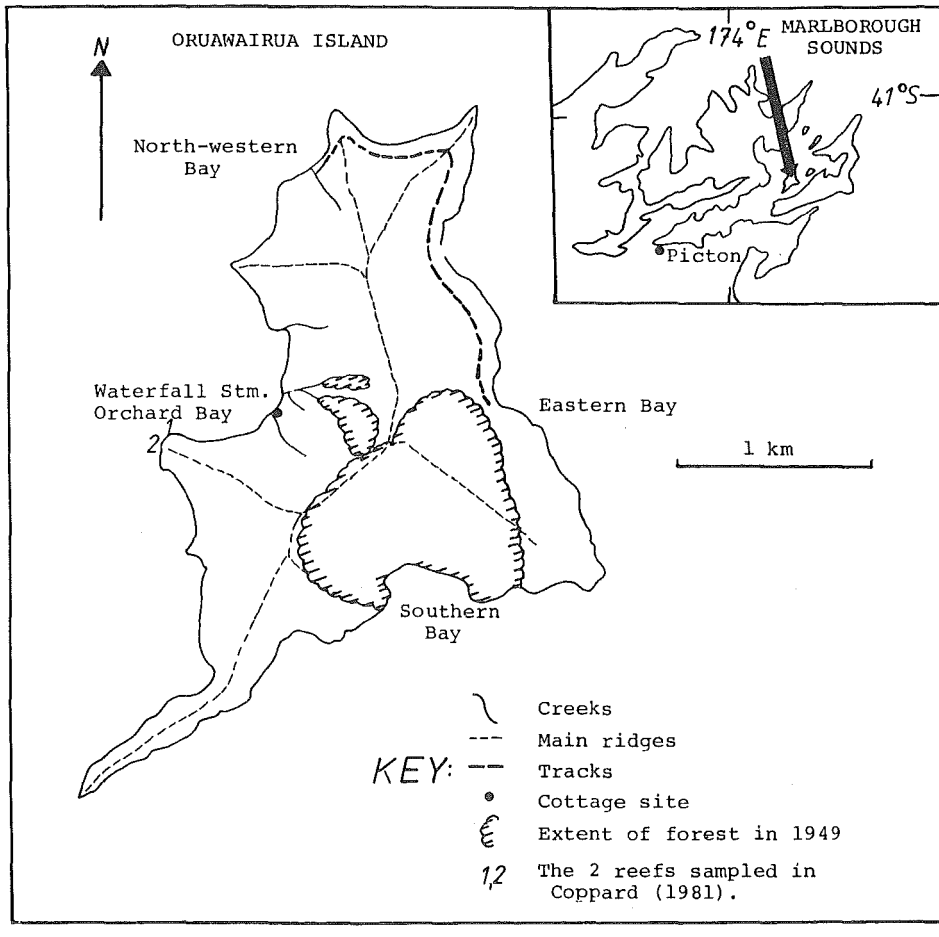

Fig. 1. Main features of Oruawairua Island.

only 100-150 days between the first and last screen frost per year. The mean annual rainfall of between 1250-2000 mm. is evenly distributed throughout the year with an average of 125-150 rain days. Westerly to north-westerly winds prevail with relatively frequent gales. The area experiences 2000-2200 sunshine hours per annum.

HISTORY

There are few records relating to the history of Oruawairua Island. The following outline is compiled primarily from the records of the Marlborough Sounds Maritime Park Board. The island was once covered in mixed hardwood-podocarp forest with small pockets of beech forest. However, as with the surrounding hills and islands in Queen Charlotte Sound, the majority of this had been burnt and cleared by the 1880's-1890's to open the land up for cattle and sheep grazing (Kelly 1976). Only an area at the head of Southern Bay remained untouched (see Fig.1 for extent of forest on the island as surveyed by the Department of Lands and Survey in 1949). The majority of this area was gazetted as a scenic reserve in 1912.

From 1940-1943 the Department of Defence took control of various vantage areas along the eastern, northern and south-western portions of the island. These were modified to some extent with the construction of World War II defence buildings. The remains of a road around the northern end of the island from a now derelict wharf in North-western Bay to Eastern Bay is still evident, although it is now largely overgrown. The areas controlled by the Department of Defence were declared scenic reserves in 1950. Shortly after this time, the whole island was declared a scenic reserve and later incorporated into the Marlborough Sounds Maritime Park in 1973.

On a small area of flat land in Orchard Bay there is a site (with some debris) where a farm cottage once stood, around which numerous horticultural plants grow. This is now used as a picnic and camping area and public conveniences have been constructed.

A re-afforestation programme by the Wellington Branch of the Forest and Bird Protection Society was attempted in 1961. Numerous species of native trees and shrubs were planted and many seeds scattered around the cottage site in Orchard Bay and along the south-western headland. Many *Pinus radiata* trees were ring-barked and poisoned on the north-eastern end of the island during this expedition.

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LITERATURE CITED

BECK, A.C. 1964. Marlborough Sounds. *Geological Map of New Zealand, 1:250,000, Sheet 14*. Department of Scientific and Industrial Research, Wellington.

COPPARD, A. 1981. Ecology of Oruawairua Island, Marlborough Sounds, New Zealand. III The Algae. *Mauri Ora 9*: 47-51.

KELLY, H.D. 1976. *As High as the Hills. The Centennial History of Picton*. Cape Catley Ltd, Queen Charlotte Sound, N.Z. 262 pp.

NEW ZEALAND SOIL BUREAU. 1965. *Soil Map of the South Island, New Zealand, 1:253,440, Sheet 2*. Department of Scientific and Industrial Research, Wellington.

NEW ZEALAND SOIL BUREAU. 1968. General survey of the soils of South Island, New Zealand. *New Zealand Soil Bureau Bulletin 27*. 404 pp.

ROBERTSON, N.G. 1959. The climate of New Zealand. pp.19-22. *In:* McLintock, A.H. (Ed.). *A Descriptive Atlas of New Zealand*. Government Printer, Wellington. 109 pp.